



**Seminar: “E-Energy –  
Challenges and Opportunities for Information Systems in the  
Smart Grid”  
(with “Topics” option on request)**

**Winter Semester 2015/2016**

**Course Description:**

Electricity used to be generated in large power plants close to the areas where the energy was used. The rise of wind and solar power has changed this traditional paradigm and created new problems for energy distribution. In addition, the deregulation of the energy market, the introduction of a range of new subsidies and the necessity of providing a secure and reliable energy supply have turned the energy sector into a very complex industry.

Information systems (IS) contribute in many ways to make the power system more efficient and its complexity more manageable. At home, they allow people to reduce their overall energy consumption and to align electricity demand with the generation from renewable sources. They enable the grid operator to integrate intermittent renewable sources and allow for an efficient exchange of information in energy trading. They support new data-centric business models and ease the coordination between the players in the energy market. Information systems lessen the trade-off between comfort and sustainability in energy consumption and are an integral part of the change in the energy sector.

In this seminar, we will research on economic and technological aspects in the modern energy sector, in particular on these fields:

- The role of battery storages as capacity provider in energy markets
- IS for the integration of distributed generation (e.g. solar power) into the grid
- The trade-off between economic efficiency and privacy aspects in the smart grid
- IS for grid expansion planning
- Regulations, subsidies and their effect on the power sector
- Methods and architectures to handle conflicting roles and to preserve Privacy

The research in this area is highly interdisciplinary. It combines methods from economics, computer science as well as electrical engineering. We will fit the topics to your preferences

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and skills. They can range from theoretical research to the development and implementation of prototypes of information systems.

### **Target Group:**

This Seminar specifically addresses students in the M.Sc. Economics and M.Sc. VWL programs. Interested and committed B.Sc. M.Sc candidates from Computer Science are encouraged to apply for specific topics. VWL and BWL students may also participate.

### **Organization:**

The seminar is held collaboratively by the Chair for Telematics and the Chair for Information Systems Research of the University of Freiburg in Cooperation with Fresenius Institute. The final presentations are intended to be combined with an excursion to Fresenius Institute Frankfurt.

Registration: from September 15, 2015 to October 19, 2015

Application via email to [stefan.reichert@iig.uni-freiburg.de](mailto:stefan.reichert@iig.uni-freiburg.de) with the following details:

- First name, last name, matriculation number
- Study program, semester
- Transcript of records with previous grades
- Short letter of motivation (5-10 sentences) stating why you want to participate particularly in this seminar
- CV (optionally)

Response whether application was successful will be sent out in the same week of the registration deadline.

First meeting: **October 26th, 2015 14:00 – 15:30 pm**

**Seminar room 2<sup>nd</sup> floor, Institute of Computer Science and Social Studies (IIG), Friedrichstr. 50**

Final presentation: Beginning of 2016 (date to be announced)

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**Communication:**

All announcements, handouts, etc. will be sent via email.

**Topics:**

Exact topics along with hints on literature will be announced together with the response to your application.

Upon request, this course can count as a "Topics" course if the student fulfils the eligibility. If so, the student is required to extend the paper and adapt it to a conference form/layout.

**Policies and Procedures**

**Grading:** Draft of seminar paper, corrected and final version thereof (about 10 to 15 pages) and final presentation

**Credit points:** 4

Credit points are applicable to: Wirtschaftsinformatik, BWL

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